Q/Tec™ QW-Series Water-to-Air Heat Pumps

Heating Capacities: 16,400 to 45,500 BTUH
Cooling Capacities: 25,000 to 53,500 BTUH
COP: 3.1 to 3.5 EER: 13.4 to 16.6

The Q/Tec™ series self contained packaged water-to-air heat pump is designed to be installed inside a building structure against an exterior exposed wall when ventilation option is selected. When no ventilation option is used, the QW-Series units can be installed in any interior space accessible to water supply system and condensate drain.

Q/Tec's™ design provides "whisper" quiet operation with total comfort for the occupants at efficiency levels up to 24% above the federal standard. This design eliminates the need for roof-mounted equipment and outside condensing units and can meet your specific architectural requirements.

Q/Tec's™ "quiet technology" provides extremely low indoor sound levels by using special components and materials in the construction of the unit. By using special motors and sound insulation we have built a heat pump system that is significantly quieter than competitive product available today.

Q/Tec™ is suitable for both new construction and renovation projects for schools, modular buildings and light commercial buildings. A variety of ventilation options are designed to address your project's indoor air quality.

The Q/Tec™ Series unique design allows all maintenance and service to be performed inside the building to facilitate multi-story installations. Access to air filters and controls is accomplished through a hinged front panel for easy accessibility. All Q/Tec™ Series models are built on heavy duty permanent rollers for easy installation and removal.

Q/Tec's™ durable, easy to clean cabinet is aesthetically pleasing and comes standard with side and bottom trim pieces. Two types of cabinet finish are available: a durable two tone (slate and platinum) vinyl covered steel, or gray pre-painted steel.

Product Features

Scroll Compressor
The Copeland scroll compressor has been designed for increased efficiency, quieter operation with reduced shutdown noise and improved reliability for longer life. Eliminates need for crankcase heater and suction line accumulator.

Liquid Line Filter Drier
Standard on all models.

Phase Rotation Monitor
Standard on all 3 phase scroll compressors. Protects against reverse rotation if power supply is not properly connected.

Indoor Blower Motor
All models feature a variable speed (ECM) motor providing super high efficiency, low sound levels and soft start capabilities. The motor is self adjusting to provide the proper airflow rate at high static pressure for ducted installations without user adjustment or wiring changes.

High Efficiency Cupro-Nickel Coaxial Water Coil (Standard)
Fully insulated to minimize sweating. Water piping connections are 1 inch. Alternate copper water coil available - not for use with open wells.

Pumping System
Unit can be connected to central piping/pumping system from well field, boiler/tower or optional pump module can be installed inside unit for individual earth loop applications.

Copper Tube/Aluminum Fin Evaporator Coil
Grooved copper tubing and enhanced aluminum fins provide maximum heat transfer and high energy efficiency. Evaporator coil constructed with hydrophilic fin stock that seals fin surface against aluminum oxide formation, is resistant to mold and mildew growth (tested to ASTM D3273, no growth) and reduces beading of condensate on the fin surface.

Cabinet
Constructed of 20 gauge pre-painted or vinyl laminated galvanized steel. Choice of either two tone vinyl finish with "slate" front panels and "platinum" cabinet for designer appearance, or gray painted steel. Vinyl finish is very resistant to scratching and marring and is very easy to clean. Tamper resistant fasteners are provided for access panels. Unit includes built-in rollers for easy installation into wall sleeve and removal for service if necessary. Hinged, lockable front panel for filter service and access to primary functional electrical controls.

Insulation
Cabinet is fully insulated with foil covered, high density fiberglass insulation with sealed edge treatment and special sound deadening insulation material in the compressor section. All insulation is designed to resist mold and mildew growth and facilitate ease of cleaning.

Electrical Components
Are easily accessible for routine inspection and maintenance through front service panels. Circuit breaker standard on all 208/230V models and toggle disconnect standard on all 460V models. Circuit breaker/toggle disconnect access is through lockable access panel. Lock and key provided as standard equipment.

Hot Water Coil
A plenum mounted hot water coil is available for both free-blow and ducted applications.

Air Filters
One-inch disposable panel type air filters are standard. Optional two-inch pleated and two-inch fiberglass disposable air filters are available. Optional Energy Recovery Ventilator has a separate filter for exhaust air to keep ERV clean.

Compressor Control Module
Built-in off-delay timer adjustable from 30 seconds to 5 minutes. Two-minute on-delay if power interrupt. 120-second bypass for low pressure control, and both soft and manual lockouts for high and low pressure controls.

High Pressure Switch
Protects refrigerant circuit against excessively high pressure.

Low Pressure Switch
Provides loss of charge protection plus protects against freeze-up of coaxial coil during heating mode due to water flow or temperature problems. Two switches are installed, and the factory wired switch is for fresh water applications.

Refrigerant Service Ports
Located in filter compartment for easy access.

Diagnostic Light
System service - indicates high or low pressure switch operation for compressor protection. Located in inside control panel.

Stainless Steel Drain Pan
Provides extended life of the evaporator drain pan for maximum corrosion resistance.

Side Trim Piece Extension
Provides cabinet extension between interior wall and unit when wall thickness is 14 inches. Standard feature shipped with all models. Optional trim kits for thinner walls available.

Optional Ventilation Packages
Optional energy recovery ventilator can provide up to 450 cfm of outside air and exhaust through the unit while maintaining indoor comfort and humidity levels. Other available options include commercial room ventilator with exhaust, and barometric damper without exhaust. Outside wall and ventilation sleeve are required for installations with ventilation option.

Optional Ventilation Wall Sleeve
Required for ventilation options only. Constructed of 16 gauge galvanized steel, coated with epoxy primer and a baked on polyester enamel paint, which allows it to withstand 1000 hours of salt spray tests per ASTM B117-03. Ordered separately.

Specifications - 2, 2½ and 3 Ton

MODELS	QW242-A	QW242-B	QW242-C	QW302-A	QW302-B	QW302-C	QW361-A	QW361-B	QW361-C
ELECTRICAL RATING--60 HZ	230/208 - 1	230/208 - 3	460 - 3	230/208 - 1	230/208 - 3	460 - 3	230/208 - 1	230/208 - 3	460 - 3
Operating Voltage Range	197-253		414-506	197-253		414-506	197-253		414-506
COMPRESSOR-- CIRCUIT A									
Voltage	230/208		460	230/208		460	230/208		460
Rated Load Amps	7.5/8.3	5.9/6.11	2.6	9.1/10.4	6.6/7.3	3.3	10.6/11.7	7.4/8.0	4.0
Branch Circuit Selection Current	10.9	7.1	3.6	12.2	7.7	3.8	13.5	9.0	4.5
Lock Rotor Amps	54	45.0	22.4	61.0	55.0	27.0	72.5	63	31
MOTOR & EVAPORATOR									
Blower Motor HP/SPD	1/2 / Variable			1/2 / Variable			1/2 / Variable		
Blower Motor--Amps	1.8			2.7			3.7		
CFM Cooling & E.S.P. w/Filter (Rated-Wet Coil)	800 @ .10			1000 @ .15			1200 @ .15		
Filter Sizes (inches) STD.	1 - 16x20x1 & 1 - 16x16x1			1 - 16x20x1 & 1 - 16x16x1			1 - 16x20x1 & 1 - 16x16x1		
SHIPPING WEIGHT--LBS.	475 lb.			475 lb.			475 lb.		

Specifications - 3½, 4 and 5 Ton

MODELS	QW421-A	QW421-B	QW421-C	QW481-A	QW481-B	QW481-C	QW601-A	QW601-B	QW601-C
ELECTRICAL RATING--60 HZ	230/208 - 1	230/208 - 3	460 - 3	230/208 - 1	230/208 - 3	460 - 3	230/208 - 1	230/208 - 3	460 - 3
Operating Voltage Range	197-253		414-506	197-253		414-506	197-253		414-506
COMPRESSOR-- CIRCUIT A									
Voltage	230/208		460	230/208		460	230/208		460
Rated Load Amps	12.8/13.9	8.2/8.9	4.5	15.7/17.1	11.1/11.9	5.5	24.7/28.3	17.1/19.5	7.6
Branch Circuit Selection Current	16.0	10.3	5.2	18.0	12.5	5.8	28.3	19.5	7.7
Lock Rotor Amps	88.0	77.0	39.0	104.0	88.0	44.0	169.0	123.0	49.5
MOTOR & EVAPORATOR									
Blower Motor HP/SPD	1/2 / Variable			1/2 / Variable			3/4 / Variable		
Blower Motor--Amps	3.7			3.7			5.5		
CFM Cooling & E.S.P. w/Filter (Rated-Wet Coil)	1200 @ .15			1400 @ .20			1550 @ .20		
Filter Sizes (inches) STD.	1 - 16x20x1 & 1 - 16x16x1			1 - 16x20x1 & 1 - 16x16x1			1 - 16x20x1 & 1 - 16x16x1		
SHIPPING WEIGHT--LBS.	505 lb.			505 lb.			535 lb.		

See Page 7 for Electrical Specifications

Indoor Blower Performance

Model	Rated ESP.	Max. ESP ①	Rated CFM ②	Optional CFM ③	Continuous CFM ④	CFM @ Max ESP
QW242	0.10	0.5	800	N/A	800	700
QW302	0.15	0.8	1000	N/A	1000	910
QW361	0.15	0.8	1200	1000	1000	1175
QW421	0.15	0.8	1200	1000	1000	1175
QW481	0.20	0.8	1400	1100	1100	1175
QW601	0.20	0.8	1550	1250	1250	1400

Note: These units are equipped with a variable speed (ECM) indoor motor that automatically adjusts itself to maintain approximately the same rate of indoor air flow in both heating and cooling, dry and wet coil conditions and at both 230/208 or 460 volts.

① Max ESP (inches WC) shown is with 1" thick disposable filter (reduced by .2 for 2" filter)

② Rated CFM (based on ducted application) for heating and cooling operation. To obtain full rated CFM on models QW361, QW421, QW481 and QW601, refer to Installation Instruction 2100-381.

③ Reduced indoor air flow option to provide lowest possible indoor air sound level. Reduces system capacity performance by approx. 2%.

④ Continuous fan CFM is the total air being circulated during continuous fan mode.

Capacity and Efficiency Ratings

Capacity and Efficiency Ratings -- Ground Loop Heat Pump Application

MODEL	RATED CFM	GPM	COOLING 77°F EWT		HEATING 32°F EWT	
			BTU/HR	EER	BTU/HR	COP
QW242	800	4	25,000	16.4	16,400	3.2
QW302	1000	6	28,600	16.6	20,000	3.5
QW361	1200	7	33,400	16.4	23,400	3.4
QW421	1200	8	40,000	16.1	26,400	3.3
QW481	1400	8	45,000	15.0	30,400	3.2
QW601	1550	11	53,500	13.4	45,500	3.1

Rated in accordance with ANSI/ARI/ASHRAE/ISO Standard 13256-1:98 Certified Water-to-Air and Brine-to-Air Heat Pump equipment which includes watt allowance for water pumping.

Cooling capacity based on 80.6°F DB/66.2°F WB entering air temperature.

Heating capacity based on 68°F DB entering air temperature.

Capacity & Efficiency Ratings -- Ground Water Heat Pump Application (Pump & Dump)

MODEL	RATED CFM	GPM	COOLING 59°F EWT		HEATING 50°F EWT	
			BTU/HR	EER	BTU/HR	COP
QW242	800	3	28,000	23.0	17,500	3.6
QW302	1000	4	30,500	22.5	26,000	4.3
QW361	1200	5	37,000	22.5	31,500	4.1
QW421	1200	6	42,000	21.5	35,500	4.0
QW481	1400	6	48,500	19.5	39,000	3.7
QW601	1550	9	58,500	18.0	55,000	3.5

Ratings outside the scope of the ANSI/ARI/ASHRAE/ISO Standard 13256-1:98 Certified Water-to-Air and Brine-to-Air Heat Pump Certification Program.

Includes watt allowance for water pumping.

Cooling capacity based on 80.6°F DB/66.2°F WB entering air temperature.

Heating capacity based on 68°F DB entering air temperature.

Capacity and Efficiency Ratings -- Water Loop Heat Pump Application (Boiler/Tower)

MODEL	RATED CFM	GPM	COOLING 86°F EWT		HEATING 68°F EWT	
			BTU/HR	EER	BTU/HR	COP
QW242	800	3	25,500	15.4	19,500	4.2
QW302	1000	4	28,500	15.4	32,000	4.9
QW361	1200	5	33,500	15.3	39,500	4.9
QW421	1200	6	37,500	14.0	43,000	4.5
QW481	1400	6	44,000	13.7	49,000	4.4
QW601	1550	9	51,500	12.0	70,500	4.0

Ratings outside the scope of the ANSI/ARI/ASHRAE/ISO Standard 13256-1:98 Certified Water-to-Air and Brine-to-Air Heat Pump Certification Program.

Includes watt allowance for water pumping

Cooling capacity based on 80.6°F DB/66.2°F WB entering air temperature.

Heating capacity based on 68°F DB entering air temperature.

Capacity and Efficiency Application Ratings - (Based on Fresh Water)

QW242 — **800 CFM 3 GPM**

DB/WB (1)	Cooling Capacity	Fluid Temperature Entering Water Coil 30°F	40°F	50°F	60°F	70°F	80°F	90°F	100°F	110°F
75/62	Total Cooling BTUH	29,800	28,300	26,900	25,600	24,400	23,300	22,300	21,500	20,700
	Sensible Cooling	20,600	20,200	19,900	19,500	19,200	18,700	18,200	17,700	17,200
	Total Heat of Rejection	31,800	31,300	31,000	30,500	30,100	29,700	29,200	28,800	28,400
	EER	31.4	27.5	24.0	20.8	18.0	15.4	13.1	11.2	9.5
80/67	Total Cooling BTUH	31,700	30,100	28,600	27,200	25,900	24,700	23,700	22,800	22,000
	Sensible Cooling	21,200	20,800	20,500	20,100	19,700	19,200	18,700	18,200	17,700
	Total Heat of Rejection	33,100	32,600	32,200	31,700	31,300	30,900	30,400	30,000	29,500
	EER	32.2	28.3	24.7	21.4	18.4	15.8	13.5	11.5	9.8
85/72	Total Cooling BTUH	34,900	33,200	31,500	30,000	28,500	27,200	26,100	25,100	24,200
	Sensible Cooling	22,300	21,900	21,600	21,200	20,700	20,200	19,700	19,200	18,600
	Total Heat of Rejection	35,100	34,600	34,200	33,700	33,200	32,800	32,300	31,800	31,300
	EER	33.3	29.2	25.5	22.1	19.1	16.3	13.9	11.9	10.1

DB (1)	Heating Capacity	Fluid Temperature Entering Water Coil 25°F (2)	30°F (2)	40°F (2)	50°F	60°F	70°F	80°F
68	Total Heating BTUH	16,000	16,500	17,400	18,200	18,900	19,600	20,100
	Total Heat of Absorption	11,800	12,000	12,500	13,100	13,800	14,500	15,300
	COP	3.29	3.40	3.61	3.79	3.96	4.10	4.23

QW302 — **1000 CFM 4 GPM**

DB/WB (1)	Cooling Capacity	Fluid Temperature Entering Water Coil 30°F	40°F	50°F	60°F	70°F	80°F	90°F	100°F	110°F
75/62	Total Cooling BTUH	30,000	29,800	29,200	28,600	28,000	27,100	26,200	25,100	23,800
	Sensible Cooling	21,900	21,500	21,100	20,700	20,300	19,800	19,400	19,000	18,600
	Total Heat of Rejection	34,500	34,100	33,700	33,400	33,000	32,600	32,300	32,000	31,800
	EER	26.5	24.3	22.1	19.9	17.8	15.8	13.7	11.7	9.8
80/67	Total Cooling BTUH	31,900	31,600	31,000	30,400	29,700	28,800	27,800	26,600	25,300
	Sensible Cooling	22,500	22,100	21,700	21,300	20,900	20,400	20,000	19,500	19,100
	Total Heat of Rejection	35,900	35,500	35,100	34,700	34,300	33,900	33,600	33,300	33,100
	EER	27.2	24.9	22.6	20.4	18.3	16.2	14.1	12.0	10.0
85/72	Total Cooling BTUH	35,100	34,800	34,100	33,500	32,700	31,700	30,600	29,300	27,900
	Sensible Cooling	23,700	23,300	22,800	22,400	22,000	21,500	21,000	20,500	20,100
	Total Heat of Rejection	38,100	37,700	37,300	36,800	36,400	36,000	35,700	35,300	35,100
	EER	28.1	25.7	23.4	21.2	18.9	16.7	14.6	12.5	10.4

DB (1)	Heating Capacity	Fluid Temperature Entering Water Coil 25°F (2)	30°F (2)	40°F (2)	50°F	60°F	70°F	80°F
68	Total Heating BTUH	18,700	20,100	23,000	26,100	29,300	32,700	36,300
	Total Heat of Absorption	13,900	15,000	17,400	20,000	23,000	26,100	29,600
	COP	3.06	3.31	3.76	4.16	4.49	4.76	4.97

QW361 — **1200 CFM 5 GPM**

DB/WB (1)	Cooling Capacity	Fluid Temperature Entering Water Coil 30°F	40°F	50°F	60°F	70°F	80°F	90°F	100°F	110°F
75/62	Total Cooling BTUH	36,700	35,900	34,900	33,900	32,900	31,700	30,500	29,200	27,800
	Sensible Cooling	27,600	27,200	26,700	26,200	25,700	25,100	24,400	23,600	22,700
	Total Heat of Rejection	41,800	40,900	40,200	39,400	38,600	38,000	37,400	36,800	36,200
	EER	30.2	27.0	23.9	21.0	18.3	15.7	13.3	11.0	8.9
80/67	Total Cooling BTUH	39,000	38,100	37,100	36,000	34,900	33,700	32,400	31,000	29,500
	Sensible Cooling	28,400	28,000	27,500	27,000	26,400	25,800	25,100	24,300	23,400
	Total Heat of Rejection	43,500	42,600	41,800	41,000	40,200	39,500	38,900	38,300	37,700
	EER	31.0	27.7	24.6	21.6	18.8	16.1	13.6	11.3	9.1
85/72	Total Cooling BTUH	42,900	42,000	40,900	39,600	38,400	37,100	35,700	34,100	32,500
	Sensible Cooling	29,900	29,400	28,900	28,400	27,800	27,100	26,400	25,600	24,600
	Total Heat of Rejection	46,200	45,200	44,400	43,500	42,700	41,900	41,300	40,600	40,000
	EER	32.1	28.7	25.4	22.3	19.4	16.7	14.1	11.7	9.4

DB (1)	Heating Capacity	Fluid Temperature Entering Water Coil 25°F (2)	30°F (2)	40°F (2)	50°F	60°F	70°F	80°F
68	Total Heating BTUH	22,100	23,500	26,600	30,200	34,300	39,000	44,200
	Total Heat of Absorption	15,300	16,600	19,700	23,100	27,000	31,200	35,900
	COP	3.20	3.41	3.83	4.23	4.62	4.99	5.35

(1) Return air temperatures Dry Bulb/Wet Bulb F.
(2) Requires antifreeze solution.

Legend: CFM = Cubic feet of airflow per minute
GPM = Gallons of water flow per minute
EER = Energy Efficiency Ratio = Total Cooling / Total Units Watts

COP = Coefficient of Performance = Total Heating / Total Units Watts x 3.413

Capacity and Efficiency Application Ratings - (Based on Fresh Water)

QW421		1200 CFM 6 GPM								
			Fluid Temperature Entering Water Coil							
DB/WB (1)	Cooling Capacity		30°F	40°F	50°F	60°F	70°F	80°F	90°F	100°F	110°F
75/62	Total Cooling BTUH		42,000	40,900	39,800	38,800	37,600	36,600	35,600	34,500	33,400
	Sensible Cooling		29,800	29,500	29,100	28,900	28,500	28,100	27,700	27,300	26,900
	Total Heat of Rejection		43,200	43,800	44,400	45,000	45,600	46,000	46,400	46,800	47,100
	EER		26.8	24.6	22.5	20.3	18.2	16.1	14.0	12.0	9.9
80/67	Total Cooling BTUH		44,600	43,500	42,300	41,200	40,000	38,900	37,800	36,600	35,500
	Sensible Cooling		30,700	30,400	30,000	29,700	29,300	28,900	28,500	28,100	27,700
	Total Heat of Rejection		44,900	45,600	46,200	46,800	47,400	47,900	48,300	48,700	49,000
	EER		27.5	25.3	23.1	20.9	18.7	16.5	14.4	12.3	10.2
85/72	Total Cooling BTUH		49,100	47,900	46,600	45,400	44,000	42,800	41,600	40,300	39,100
	Sensible Cooling		32,300	32,000	31,500	31,200	30,800	30,400	30,000	29,600	29,100
	Total Heat of Rejection		47,600	48,400	49,000	49,700	50,300	50,800	51,200	51,700	52,000
	EER		28.4	26.1	23.9	21.6	19.3	17.1	14.9	12.7	10.5
DB (1)	Heating Capacity	Fluid Temperature Entering Water Coil									
		25°F (2)	30°F (2)	40°F (2)	50°F	60°F	70°F	80°F			
68	Total Heating BTUH	23,400	25,900	30,700	35,300	39,700	43,900	48,000			
	Total Heat of Absorption	17,000	18,900	22,700	26,500	30,300	34,000	37,700			
	COP	3.06	3.31	3.76	4.16	4.49	4.76	4.97			

QW481		1400 CFM 6 GPM								
			Fluid Temperature Entering Water Coil							
DB/WB (1)	Cooling Capacity		30°F	40°F	50°F	60°F	70°F	80°F	90°F	100°F	110°F
75/62	Total Cooling BTUH		47,900	47,200	46,400	45,300	43,900	42,300	40,700	38,700	36,500
	Sensible Cooling		35,300	35,500	34,600	34,000	33,300	32,400	31,500	30,400	29,100
	Total Heat of Rejection		56,900	56,200	55,500	54,800	54,000	53,100	52,400	51,500	50,600
	EER		26.2	23.6	21.0	18.6	16.4	14.3	12.3	10.5	8.8
80/67	Total Cooling BTUH		50,900	50,200	49,300	48,100	46,700	45,000	43,200	41,100	38,800
	Sensible Cooling		36,300	36,000	35,600	35,000	34,300	33,400	32,400	31,300	30,000
	Total Heat of Rejection		59,200	58,500	57,800	57,000	56,200	55,300	54,500	53,600	52,700
	EER		26.9	24.2	21.6	19.1	16.8	14.6	12.6	10.7	9.0
85/72	Total Cooling BTUH		56,000	55,300	54,300	53,000	51,400	49,500	47,600	45,300	42,700
	Sensible Cooling		38,200	37,800	37,400	36,800	36,100	35,100	34,100	32,900	31,500
	Total Heat of Rejection		62,800	62,100	61,300	60,500	59,600	58,700	57,800	56,900	55,900
	EER		27.8	25.0	22.3	19.8	17.4	15.2	13.1	11.1	9.3
DB (1)	Heating Capacity	Fluid Temperature Entering Water Coil									
		25°F (2)	30°F (2)	40°F (2)	50°F	60°F	70°F	80°F			
68	Total Heating BTUH	27,000	29,500	34,700	39,800	45,100	50,400	55,700			
	Total Heat of Absorption	19,400	21,200	25,100	29,400	34,000	39,100	44,500			
	COP	2.86	3.07	3.46	3.79	4.06	4.26	4.41			

QW601		1550 CFM 9 GPM								
			Fluid Temperature Entering Water Coil							
DB/WB (1)	Cooling Capacity		30°F	40°F	50°F	60°F	70°F	80°F	90°F	100°F	110°F
75/62	Total Cooling BTUH		61,800	58,800	56,100	53,700	51,700	49,900	48,400	47,200	46,400
	Sensible Cooling		42,800	42,000	41,100	40,100	39,100	38,200	37,200	36,200	35,300
	Total Heat of Rejection		74,800	72,200	70,000	68,200	66,700	65,500	64,700	64,200	64,000
	EER		23.4	20.8	18.4	16.1	14.2	12.4	10.8	9.5	8.3
80/67	Total Cooling BTUH		65,700	62,500	59,600	57,100	54,900	53,000	51,400	50,200	49,300
	Sensible Cooling		44,100	43,200	42,300	41,300	40,300	39,300	38,300	37,300	36,300
	Total Heat of Rejection		77,900	75,200	72,900	71,000	69,400	68,200	67,300	66,800	66,600
	EER		24.0	21.3	18.8	16.6	14.5	12.7	11.1	9.7	8.5
85/72	Total Cooling BTUH		72,300	68,800	65,600	62,900	60,400	58,300	56,600	55,300	54,300
	Sensible Cooling		46,400	45,400	44,500	43,400	42,400	41,300	40,300	39,200	38,200
	Total Heat of Rejection		82,600	79,800	77,300	75,300	73,600	72,300	71,400	70,900	70,600
	EER		24.8	22.1	19.5	17.1	15.0	13.1	11.5	10.0	8.8
DB (1)	Heating Capacity	Fluid Temperature Entering Water Coil									
		25°F (2)	30°F (2)	40°F (2)	50°F	60°F	70°F	80°F			
68	Total Heating BTUH	41,900	44,500	50,200	56,500	63,500	71,200	79,400			
	Total Heat of Absorption	19,400	21,200	25,100	29,400	34,000	39,100	44,500			
	COP	2.85	3.02	3.32	3.59	3.82	4.00	4.15			

(1) Return air temperatures Dry Bulb/Wet Bulb F.
(2) Requires antifreeze solution.

COP = Coefficient of Performance = $\frac{\text{Total Heating}}{\text{Total Units Watts x 3.413}}$

Legend: CFM = Cubic feet of airflow per minute
GPM = Gallons of water flow per minute
EER = Energy Efficiency Ratio = $\frac{\text{Total Cooling}}{\text{Total Units Watts}}$

Water Coil Pressure Drop (Fresh Water)

GPM	HEAT PUMP MODELS							
	QW242		QW302		QW361, QW421, QW481		QW601	
	PSIG	Ft. Hd.	PSIG	Ft. Hd.	PSIG	Ft. Hd.	PSIG	Ft. Hd.
3	1.00	2.31						
4	1.42	3.28	1.00	2.31				
5	1.83	4.22	1.43	3.30	1.80	4.15		
6	2.24	5.17	1.86	4.29	3.28	7.57		
7	2.66	6.14	2.30	5.31	4.77	11.01		
8			2.73	6.30	6.26	14.46	3.30	7.63
9					7.75	17.90	4.30	9.94
10					9.24	21.34	5.00	11.55
11							6.00	13.86
12							7.00	16.17
13							8.20	18.95

Loop Pump Module and Pump Output ①

Pump Model	No. of Pumps	WATER FLOW RATE REQUIRED IN GPM					
		6	8	10	12	14	16
WGPM-1C (w/cabinet)	1	29	28	27	25	23	22
WGPM-2C (w/cabinet)	2	58	56	54	50	46	44

① Pump output (feet of head) @ GPM at top of column.

Flow Rates for Various Fluids

	QW242	QW302	QW361	QW421	QW481	QW601
Flow rate required GPM fresh water	3	4	5	6	6	9
Flow rate required GPM 15% Sodium Chloride	4	6	7	8	8	11
Flow rate required GPM 25% GS4	4	6	7	8	8	11

Correction Factors for Performance at Other Water Flows

Rated Flow Plus	Heating		Cooling	
	BTUH	Watts	BTUH	Watts
2 GPM	1.00	0.98	1.01	1.00
4 GPM	1.01	0.97	1.03	1.01
6 GPM	1.02	0.96	1.05	1.02
8 GPM	1.02	0.95	1.05	1.02

Ventilation System Packages

Q-Tec models are designed to provide optional ventilation packages to meet all of your ventilation and indoor air quality requirements. All ventilation packages are factory installed.

NOTE: A ventilation wall sleeve QWVS42 with outdoor louver grille is required for all installations that intend to utilize one of the built-in ventilation options of the QW-Series heat pumps. If a ventilation option is not to be utilized, do not order ventilation wall sleeve.

BAROMETRIC FRESH AIR DAMPER **OPTIONAL**

The barometric fresh air damper allows outside ventilation air, up to 25% of the total airflow rating of the unit, to be introduced through the ventilation louver grille and to be mixed with the conditioned air. The damper opens during blower operation and closes when the blower is off. Adjustable blade stops allow different amounts of outside air to be introduced into the building and can be easily locked closed if required.

NOTE: The above vent systems are intake only without built-in exhaust capability. Building will likely require separate field installed barometric relief or mechanical exhaust elsewhere within the conditioned space. Balancing dampers in the return air grille may be required to achieve specified amount of outdoor air intake.

COMMERCIAL ROOM VENTILATOR **OPTIONAL**

The built-in commercial room ventilator is internally mounted and allows outside ventilation air, up to 50% of the total airflow rating of the unit, to be introduced through the ventilation louver grille. It includes a built-in exhaust air damper. Spring return on power loss or deactivation. The commercial room ventilator (CRV) is a simple and innovative approach to improving the indoor air quality by providing fresh air intake and exhaust capability through the CRV. The damper can be easily adjusted to control the amount of fresh air supplied into the building. The CRV can be controlled by indoor blower operation or field controlled based on room occupancy. Complies with ANSI/ASHRAE Standard 62.1 “Ventilation for Acceptable Indoor Air Quality”.

Two Models Available: - Spring return on power loss or deactivation
- Power return (will not close on power loss)

ENERGY RECOVERY VENTILATOR **OPTIONAL**

The energy recovery ventilator (ERV) is a highly innovative approach to meeting indoor air quality ventilation requirements as established by ANSI/ASHRAE Standard 62.1. The ERV is internally mounted and allows up to 450 CFM (depending upon speed setting) of fresh air and exhaust through the unit while maintaining superior indoor comfort and humidity levels. In most cases this can be accomplished without increasing equipment sizing or operating costs. Heat transfer efficiency is up to 64% during summer and 79% during winter conditions.

The ERV consists of a unique “rotary energy recovery cassette” that provides effective sensible and latent heat transfer capabilities during summer and winter conditions. Various control schemes are addressed including limiting ventilation during building occupancy only. The ERV has a filter for the exhaust air to keep the rotary wheels clean and free of any debris introduced through the room return air grille. The intake and exhaust rates can be independently selected. Factory set on medium intake and low exhaust.

ELECTRICAL SPECIFICATIONS

MODEL	RATED VOLTS & PHASE	NO. FIELD POWER CIRCUITS	③ MINIMUM CIRCUIT AMPACITY	① MAXIMUM EXTERNAL FUSE OR CIRCUIT BREAKER	② FIELD POWER WIRE SIZE	② GROUND WIRE SIZE
QW242-A0Z	230/208-1	1	18	25	10	10
QW242-B0Z	230/208-3	1	14	20	12	12
QW242-C0Z	460-3	1	8	15	14	14
QW302-A0Z	230/208-1	1	21	30	10	10
QW302-B0Z	230/208-3	1	16	20	12	12
QW302-C0Z	460-3	1	10	15	14	14
QW361-A0Z	230/208-1	1	24	35	8	10
QW361-B0Z	230/208-3	1	19	25	10	10
QW361-C0Z	460-3	1	10	15	14	14
QW421-A0Z	230/208-1	1	27	40	8	10
QW421-B0Z	230/208-3	1	20	30	10	10
QW421-C0Z	460-3	1	11	15	14	14
QW481-A0Z	230/208-1	1	31	45	8	10
QW481-B0Z	230/208-3	1	24	35	8	10
QW481-C0Z	460-3	1	12	15	14	14
QW601-A0Z	230/208-1	1	45	60	8	10
QW601-B0Z	230/208-3	1	34	45	8	10
QW601-C0Z	460-3	1	16	20	12	12

① Maximum size of the time delay fuse or HACR type circuit breaker for protection of field wiring conductors.
② Based on 75°C copper wire. All wiring must conform to the National Electrical Code and all local codes.
③ These "Minimum Circuit Ampacity" values are to be used for sizing the field power conductors. Refer to the National Electrical Code (latest revision) article 310 for power conductor sizing.

Commercial Room Ventilator Performance Tables

TABLE 1

QH242 VENTILATION MODE CFM				
Damper Position	Free Blow	Static Pressure		
		0.1	0.3	0.5
A	125	120	100	75
B	135	130	115	100
C	165	160	160	140
D	255	255	235	195
E	375	320	290	265

TABLE 2

QH242 COOLING & HEATING MODE CFM				
Damper Position	Free Blow	Static Pressure		
		0.1	0.3	0.5
A	220	215	200	175
B	245	235	210	185
C	255	260	245	225
D	335	335	330	290
E	385	385	360	320

TABLE 3

QH302 Ventilation Mode CFM QH362 Ventilation Mode CFM QH422 Ventilation Mode CFM QH482 Ventilation Mode CFM				
Damper Position	Free Blow	Static Pressure		
		0.1	0.2	0.3
A	140	135	125	120
B	180	170	160	160
C	220	210	205	195
D	315	315	315	290
E	410	400	385	380

TABLE 4

QH302 COOLING & HEATING MODE CFM QH362 LOW SPEED COOLING & HEATING MODE CFM QH422 LOW SPEED COOLING & HEATING MODE CFM QH482 LOW APEED COOLING & HEATING MODE CFM				
Damper Position	Free Blow	Static Pressure		
		0.1	0.3	0.5
A	235	230	225	220
B	265	250	245	240
C	325	315	300	290
D	400	400	390	380
E	465	460	445	430

TABLE 5

QH362 HIGH SPEED COOLING & HEATING MODE CFM QH422 HIGH SPEED COOLING & HEATING MODE CFM QH482 HIGH SPEED COOLING & HEATING MODE CFM				
Damper Position	Free Blow	Static Pressure		
		0.1	0.3	0.5
A	255	250	250	230
B	285	280	280	280
C	360	360	350	345
D	445	445	445	440
E	500	500	500	490

TABLE 6

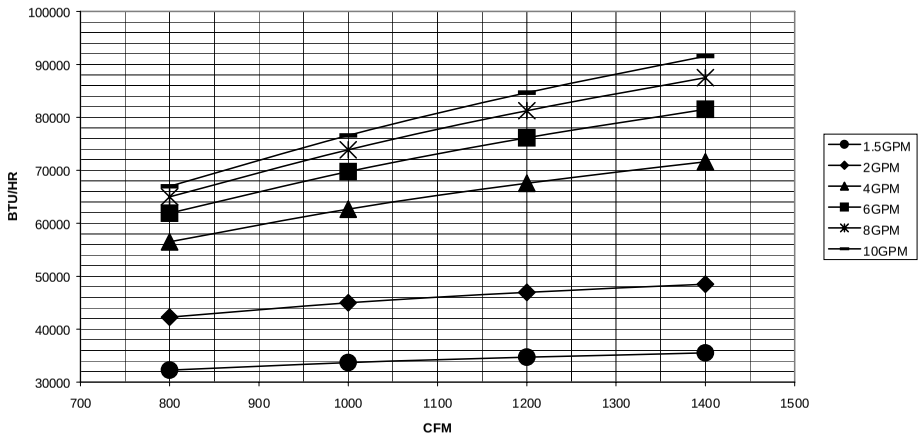
QH602 VENTILATION MODE CFM				
Damper Position	Free Blow	Static Pressure		
		0.1	0.3	0.5
A	185	185	180	180
B	215	215	210	200
C	290	290	280	275
D	370	370	365	350
E	465	465	455	445

TABLE 7

QH602 COOLING & HEATING MODE CFM				
Damper Position	Free Blow	Static Pressure		
		0.1	0.3	0.5
A	235	230	230	215
B	265	260	255	255
C	350	350	345	340
D	470	470	455	450
E	580	570	565	560

NOTE: Ventilation airflow will increase up to 50 CFM during backup or emergency heat operation due to increased total airflow.

Optional Hot Water Coil Performance - Heating Capacity @ 180°F Water and 70°F Return Air



Notes:

① Water connections are 7/8" O.D. copper.
② 3-way flow valve is factory installed.
③ Control wiring included, and can be operated as either 1st or 2nd stage.

Energy Recovery Ventilator Performance Tables

SUMMER COOLING PERFORMANCE
(INDOOR DESIGN CONDITIONS 75° DB / 62° WB)

Ambient O.D.		VENTILATION RATE – 450 CFM 65% Efficiency						VENTILATION RATE – 375 CFM 66% Efficiency						VENTILATION RATE – 300 CFM 67% Efficiency					
DB/WB DegreesF		VLT	VLS	VLL	HRT	HRS	HRL	VLT	VLS	VLL	HRT	HRS	HRL	VLT	VLS	VLL	HRT	HRS	HRL
	75	21465	14580	6884	13952	9477	4475	17887	12150	5737	11805	8018	3786	14310	9720	4590	9587	6512	3075
105	70	14580	14580	0	9477	9477	0	12150	12150	0	8018	8018	0	9720	9720	0	6512	6512	0
	65	14580	14580	0	9477	9477	0	12150	12150	0	8018	8018	0	9720	9720	0	6512	6512	0
	80	31590	12150	19440	20533	7897	12635	26325	10125	16200	17374	6682	10692	21060	8100	12960	14110	5427	8683
	75	21465	12150	9314	13952	7897	6054	17887	10125	7762	11805	6682	5123	14310	8100	6210	9587	5427	4160
100	70	12352	12150	202	8029	7897	131	10293	10125	168	6793	6682	111	8235	8100	135	5517	5427	90
	65	12150	12150	0	7897	7897	0	10125	10125	0	6682	6682	0	8100	8100	0	5427	5427	0
	60	12150	12150	0	7897	7897	0	10125	10125	0	6682	6682	0	8100	8100	0	5427	5427	0
	80	31590	9720	21870	20533	6318	14215	26325	8100	18225	17374	5345	12028	21060	6480	14580	14110	4341	9768
	75	21465	9720	11744	13952	6318	7634	17887	8100	9787	11805	5345	6459	14310	6480	7830	9587	4341	5246
95	70	12352	9720	2632	8029	6318	1711	10293	8100	2193	6793	5345	1447	8235	6480	1755	5517	4341	1175
	65	9720	9720	0	6318	6318	0	8100	8100	0	5345	5345	0	6480	6480	0	4341	4341	0
	60	9720	9720	0	6318	6318	0	8100	8100	0	5345	5345	0	6480	6480	0	4341	4341	0
	80	31590	7290	24300	20533	4738	15794	26325	6075	20250	17374	4009	13365	21060	4860	16200	14110	3256	10854
	75	21465	7290	14175	13952	4738	9213	17887	6075	11812	11805	4009	7796	14310	4860	9450	9587	3256	6331
90	70	12352	7290	5062	8029	4738	3290	10293	6075	4218	6793	4009	2784	8235	4860	3375	5517	3256	2261
	65	7290	7290	0	4738	4738	0	6075	6075	0	4009	4009	0	4860	4860	0	3256	3256	0
	60	7290	7290	0	4738	4738	0	6075	6075	0	4009	4009	0	4860	4860	0	3256	3256	0
	80	31590	4860	26730	20533	3159	17374	26325	4050	22275	17374	2672	14701	21060	3240	17820	14110	2170	11939
	75	21465	4860	16605	13952	3159	10793	17887	4050	13837	11805	2672	9132	14310	3240	11070	9857	2170	7416
85	70	12352	4860	7492	8029	3159	4870	10293	4050	6243	6793	2672	4120	8235	3240	4995	5517	2170	3346
	65	4860	4860	0	3159	3159	0	4050	4050	0	2672	2672	0	3240	3240	0	2170	2170	0
	60	4860	4860	0	3159	3159	0	4050	4050	0	2672	2672	0	3240	3240	0	2170	2170	0
	75	21465	2430	19035	13952	1579	12372	17887	2025	15862	11805	1336	10469	14310	1620	12690	9587	1085	8502
	70	12352	2430	9922	8029	1579	6449	10293	2025	8268	6793	1336	5457	8235	1620	6615	5517	1085	4432
80	65	4252	2430	1822	2764	1579	1184	3543	2025	1518	2338	1336	1002	2835	1620	1215	1899	1085	814
	60	2430	2430	0	1579	1579	0	2025	2025	0	1336	1336	0	1620	1620	0	1085	1085	0
	70	12352	0	12352	8029	0	8029	10293	0	10293	6793	0	6793	8235	0	8235	5517	0	5517
75	65	4252	0	4252	2764	0	2764	3543	0	3543	2338	0	2338	2835	0	2835	1899	0	1899
	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

LEGEND

VLT = Ventilation Load – Total
VLS = Ventilation Load – Sensible
VLL = Ventilation Load – Latent
HRT = Heat Recovery – Total
HRS = Heat Recovery – Sensible
HRL = Heat Recovery – Latent

WINTER HEATING PERFORMANCE
(INDOOR DESIGN CONDITIONS 70° F DB)

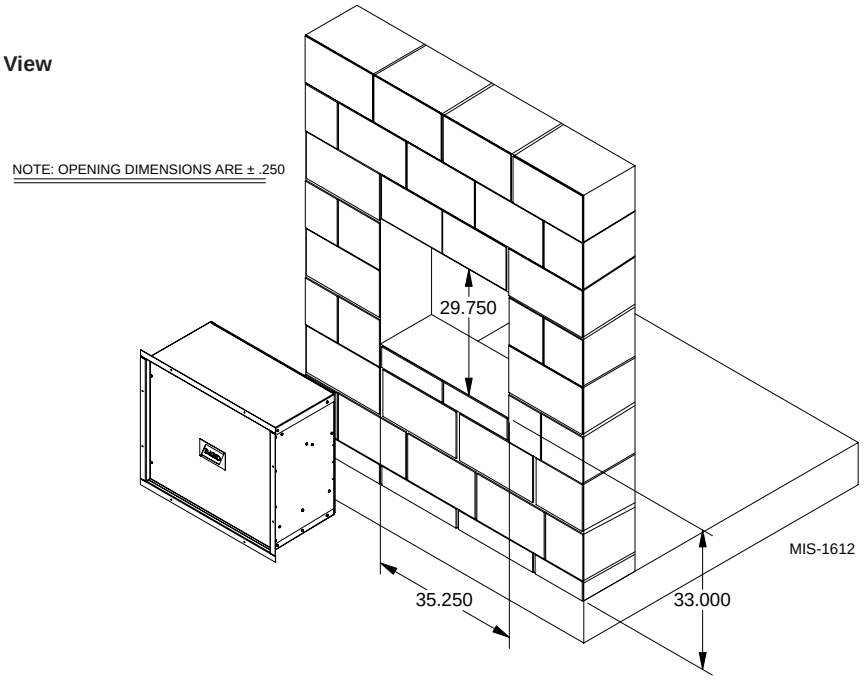
Ambient O.D.	VENTILATION RATE					
DB Degrees F	450 CFM 80% Eff.		375 CFM 81% Eff.		300 CFM 802 Eff.	
	WVL	WHR	WVL	WHR	WVL	WHR
65	2430	1944	2025	1640	1620	1328
60	4860	3888	4050	3280	3240	2656
55	7290	5832	6075	4920	4860	3985
50	9720	7776	8100	6561	6480	5313
45	12150	9720	10125	8201	8100	6642
40	14580	11664	12150	9841	9720	7970
35	17010	13608	14175	11481	11340	9298
30	19440	15552	16200	13122	12960	10627
25	21870	17496	18225	14762	14580	11955
20	24300	19440	20250	16402	16200	13284
15	26730	21384	22275	18042	17820	14612

NOTE: Sensible performance only is shown for winter application.

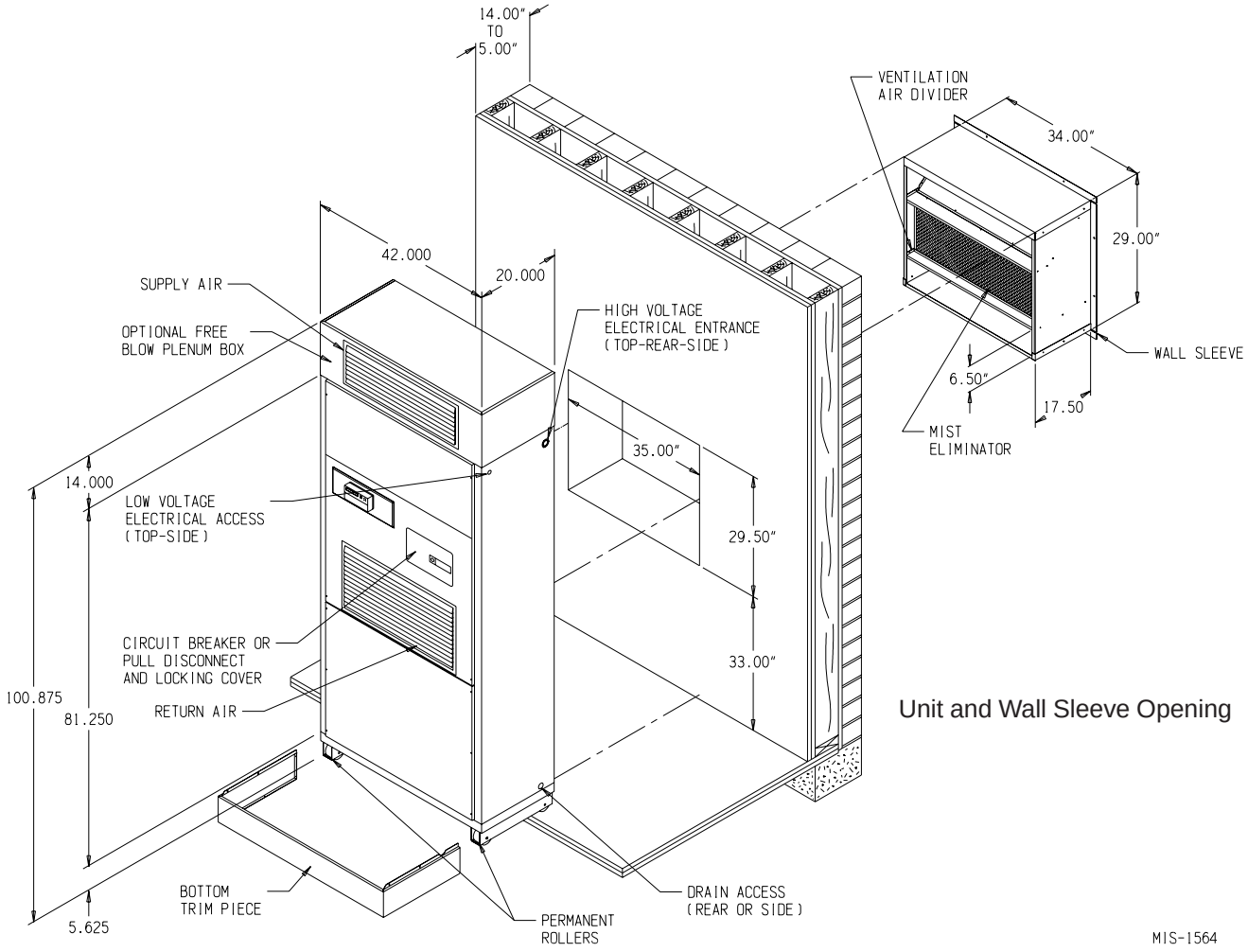
LEGEND
WVL=Winter Ventilation Load
WHR=Winter Heat Recovery

Installation Overview of Ventilation Wall Sleeve

Exterior Wall View

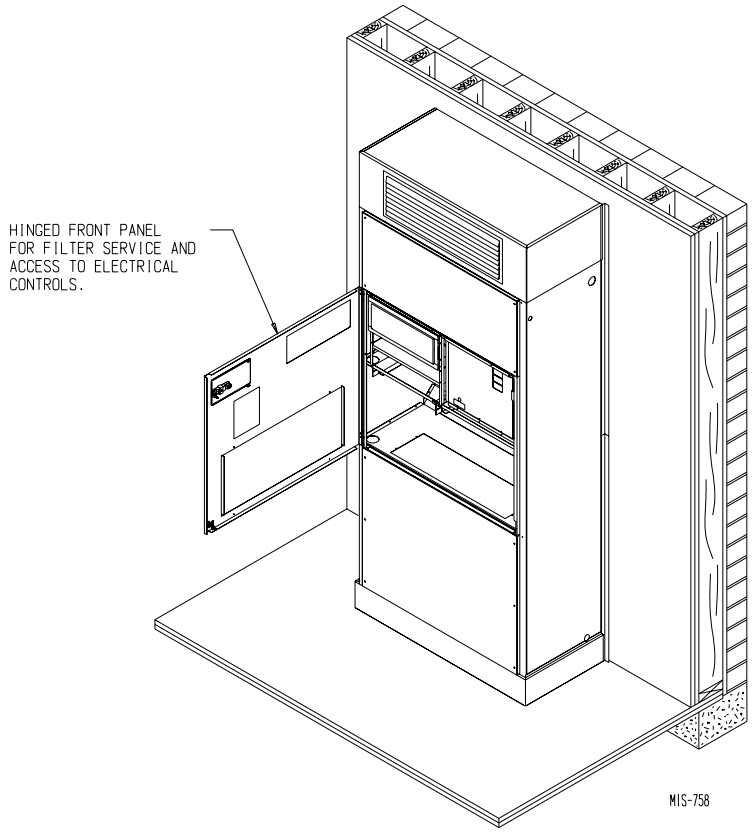


NOTE: Wall opening and wall sleeve required only when one of the ventilation options is utilized. Installations not utilizing any ventilation option can be made in any interior space accessible to electrical supply, water supply system and condensate drain.

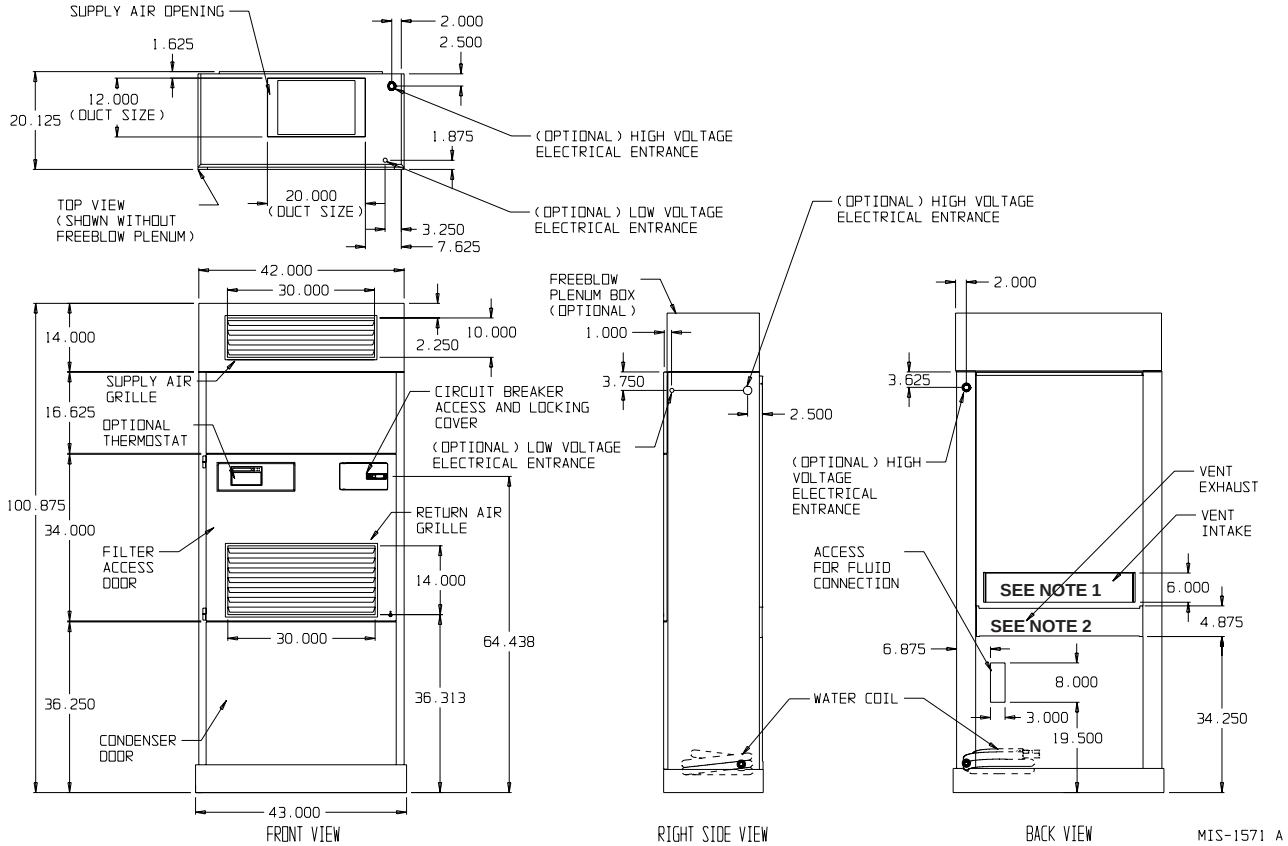


Unit and Wall Sleeve Opening

Installation Overview — Unit Installed with Free Blow Plenum Box



Dimensions of Basic Unit for Architectural and Installation Requirements (Nominal)



NOTE 1: Ventilation intake opening for barometric fresh air damper, commercial room ventilator (CRV) or energy recovery ventilator (ERV). Opening is sealed if no vent option.

NOTE 2: Ventilation exhaust opening for CRV and ERV vent options. Opening is sealed for no vent option and for barometric fresh air damper.

Q/Tec™ Model Nomenclature

QW 36 1 — A 0Z X X V X X X

MODEL NUMBER
QW - Q/TEC™ Model

CAPACITY
24 - 2 Ton
30 - 2½ Ton
36 - 3 Ton
42 - 3½ Ton
48 - 4 Ton
60 - 5 Ton

REVISION

SPECIALTY PRODUCTS ③
(Non-Standard)

VOLTS & PHASE
A - 230/208/60/1
B - 230/208/60/3
C - 460/60/3

KW
0Z - 0KW

VENTILATION OPTIONS
X - Barometric Fresh Air Damper (Standard)
B - Blank-off Plate
V - Commercial Ventilator - Motorized w/Exhaust Spring Return
P - Commercial Ventilator - Motorized w/Exhaust Power Return
R - Energy Recovery Ventilator w/Independent Intake/Exhaust Control

FILTER OPTIONS
X - 1-Inch Fiberglass (Standard)
F - 2-Inch Fiberglass
P - 2-Inch Pleated

COLOR
V - Platinum w/Slate Front (Vinyl)
4 - Buckeye Gray (Painted)

CLIMATE CONTROL ①
X - None
A - Electronic/Non Prog
D - Electronic/Prog
E - Electronic/Prog/Humidistat
G - Electronic Non-Prog/Humidistat

COIL OPTIONS
X - Standard evaporator coil Cupronickel water coil
4 - Standard evaporator coil-Copper water coil ②

INTERNAL CONTROLS
X - Standard
- High Pressure Switch
- Low Pressure Switch
- Compressor Time Delay

NOTE: ① Climate control option "X", "E" or "G" must be ordered in conjunction with the dehumidification circuit. If "X" control option is selected, humidistat must be field supplied. For CS2000A2 applications, order "X" control option for field supplied and installed thermostat and humidistat, or "G" control option for factory installed electronic non-programmable/Man or Auto C/O thermostat and humidistat. "G" option can be used without CS2000A2 only if "X" or "B" ventilation option is used, unless other control provisions are field supplied to limit ventilation to occupied periods. ② For cooling tower or ground loop only, not for use with open wells. ③ Insert "D" for dehumidification with hot gas reheat. Reference Form F1773 for complete details.

Optional Field Installed Accessories - Must Be Used For Each Installation w/Ventilation Options

Ventilation Wall Sleeves:	
QWVS42	Ventilation wall sleeve for walls up to 14 inches thick. **NOTE:** For walls from 8 to 14 inches also order side trim extension kit QSTX42A-V or -4. See below.
Ventilation Outdoor Louver Grilles:	
QLG-11	Clear Anodized Aluminum for vent option
QLG-21	Medium Bronze Anodized Aluminum for vent option
QLG-31	Dark Bronze Anodized Aluminum for vent option

Optional Field Installed Accessories - For Ground Loop Installations

WGPM-1C	Single pump module for individual loop system. 22 feet of head @ 16 GPM. Installs inside QW unit. 230V 60Hz 1-Ph. Used with all models, including 460V. Connections are 1 inch FPT. Fully insulated cabinet.
WGPM-2C	Dual pump module for individual loop system. 44 feet of head @ 16 GPM. Installs inside QW unit. 230V 60Hz 1-Ph. Used with all models, including 460V. Connections are 1 inch FPT. Fully insulated cabinet.
WGRK-1	460V relay kit. Required when installing a pump module in a 460V unit.

Optional Field Installed Accessories - For Water Coil Connections

WGHK-1	1 inch stainless steel hose kit with ball valve, PT fittings, and union fitting with 1 inch MPT both ends. Kit consists of two (2) completely assembled hose assemblies.	
WGAFC-3	3 GPM	Automatic flow control assembly with strainer, 1 inch ball valve, dual PT fittings, and drain valve. Order correct WGAFC by GPM requirements. The WGAFC assembly is used in conjunction with WGHK-1 hose kit when flow control is required.
WGAFC-4	4 GPM	
WGAFC-5	5 GPM	
WGAFC-6	6 GPM	
WGAFC-9	9 GPM	

Optional Field Installed Accessories - Additional Items As Determined By Job Specifications

NOTE: The following accessory items must be selected so that the finish (color) is matched to the QW-model that they will be used with.

Side Trim Extension Kits: Only required if wall sleeve and ventilation option installed.
Required when wall thickness is less than 14 inches and works for walls down to 8 inches thick. Used in place of standard trim kit supplied with unit to cover the space between unit and wall. Walls less than 8 inches require custom field enclosure.

					Unit Compatibility
QSTX42A-V	Platinum vinyl	QSTX42A-4	Gray paint		All models
Free-Blow Plenum Boxes:					***Unit Compatibility***
QPB42-V	Platinum vinyl	QPB42-4	Gray paint	Front supply, 4-way deflection grille	All models
QPBS42-V	Platinum vinyl	QPBS42-4	Gray paint	Same as QPB42, plus 2-way deflection grille on each side	All models
Top Fill Systems for Finishing Plenum Boxes to Ceilings:					***Unit Compatibility***
QPBX42-9-V	Platinum vinyl	QPBX42-9-4	Gray paint	Use with QPB42 or QPBS42 (adjusts to ceilings up to 9' 6")	All models
QPBX42-10-V	Platinum vinyl	QPBX42-10-4	Gray paint	Use with QPB42 or QPBS42 (adjusts to ceilings up to 10' 2")	All models
Cabinet Extensions for Ducted Applications:					***Unit Compatibility***
QCX10A-V	Platinum vinyl	QCX10A-4	Gray paint	20" height (adjusts for ceilings up to 9' 4"; add QPBX42-9 for 9'4" to 10' finished ceiling heights)	All models
Hot Water Coils with Plenum Boxes:					***Unit Compatibility***
QPBHW42-F-V	Platinum vinyl	QPBHW42-F-4	Gray paint	Free-Blow plenum box	All models
QPBHW42-D-V	Platinum vinyl	QPBHW42-D-4	Gray paint	Ducted plenum box	All models

See page 10 for heating capacity performance

NOTE: The same top fill system and cabinet extensions can be used with hot water coil plenum boxes as with standard plenum boxes.

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Due to our continuous product improvement policy, all specifications subject to change without notice.

Before purchasing this appliance, read important energy cost and efficiency information available from your retailer.

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